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An Assignment Report on

Cloud Computing

Submitted in Partial Fulfilment of the Requirement for the III Semester MCA Assignment 20MCA331

MASTER OF COMPUTER APPLICATIONS

By

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CERTIFICATE

This is to certify that the NITHIN bearing USN: 1RV21MC067 has successfully completed the Assignment (20MCA331) on "E-Education website hosting in AWS S3" in a partial fulfilment of III semester MCA during the academic year 2022-2023.

Part A	Maximum Marks	Marks Obtained
Course Name	15	
Demonstration Title	15	

Dr. Mohan Aradhya Assistant Professor

Department of MCA, RV College of Engineering®

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PART A

1. Course Title

Microsoft Azure Fundamentals AZ-900 Exam Prep

- Introduction to Microsoft Azure Cloud Services
- Microsoft Azure Management Tools and Security Solutions
- Microsoft Azure Services and Lifecycles
- Preparing for the AZ-900 Microsoft Azure Fundamentals Exam

2. Duration

- Introduction to Microsoft Azure Cloud Services 10 hours
- Microsoft Azure Management Tools and Security Solutions 9 hours
- Microsoft Azure Services and Lifecycles 7 hours
- Preparing for the AZ-900 Microsoft Azure Fundamentals Exam 6 hours

3. Introduction

Cloud computing refers to the delivery of computing resources, such as servers, storage, databases, networking, software, analytics, and intelligence, over the internet to offer faster innovation, flexible resources, and economies of scale. The key characteristics of cloud computing are on-demand self-service, broad network access, resource pooling, rapid elasticity, and measured service. One of the main benefits of cloud computing is the ability to scale resources up or down as needed, without having to invest in expensive hardware or infrastructure. This makes it ideal for businesses of all sizes, as they can save money and increase efficiency by paying only for what they use.

Another benefit of cloud computing is the ease of access to a wide range of services and technologies, such as big data analytics, artificial intelligence, and Internet of Things (IoT) capabilities. This allows businesses to quickly and easily adopt new technologies and solutions to meet their evolving needs. Cloud computing also provides increased reliability, as it often uses multiple redundant sites to store data and applications, which helps to minimize the risk of downtime.

There are three main types of cloud computing services: Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). IaaS provides virtualized computing resources, such as servers and storage, over the internet. PaaS provides a platform for developing, running, and managing applications and services, while SaaS delivers software applications over the internet on a subscription basis. In conclusion, cloud

computing offers numerous benefits for businesses, including cost savings, flexibility, scalability, and access to a wide range of technologies. It is a game-changer for how businesses approach computing resources and has become a mainstream technology for many organizations.

4. Course Content

• Introduction to Microsoft Azure Cloud Services

This module introduces the to the basics of cloud computing and Azure, and how to get started with Azure's subscriptions and accounts.

Microsoft Azure Fundamental Concepts & Architectural Components

In this module learnt about the advantages of using cloud computing services and how to differentiate between the categories and types of cloud computing. Also examine the various concepts, resources, and terminology that are necessary to work with Azure architecture.

Microsoft Azure Database, Analytics, & Compute Services

This week, learnt about several of the database services that are available on Microsoft Azure, such as Azure Cosmos DB, Azure SQL Database, Azure SQL Managed Instance, Azure Database for MySQL, and Azure Database for PostgreSQL. In addition, learnt about several of the big data and analysis services in Azure. Also learnt how to take advantage of several virtualization services in Azure compute, which can help applications scale out quickly and efficiently to meet increasing demands.

Microsoft Azure Storage & Networking Services

This week, learnt about some of the different storage options that are available in Azure Storage services, and the scenarios in which each storage option is appropriate. As individual units in this module is completed, learnt about Azure Blob Storage, Azure Disk Storage, Azure Files, and Blob access tiers. Also took a look at several of the core networking resources that are available in Azure. Learnt about Azure Virtual Network, which can configure into a customized network environment that meets company's needs. Also learnt how one can use Azure VPN Gateway and Azure ExpressRoute to create secure communication tunnels between company's different locations.

• Microsoft Azure Management Tools and Security Solutions

AI Services & Solutions

In this module, learnt about AI and software development tools and services from Microsoft Azure. Got introduced to these tools and services and instruction to help choose the best one for a given business scenario.

Monitoring & Managing in Microsoft Azure

In this module, learnt about monitoring and management tools and services from Microsoft Azure. Introduced to these tools and services and asked to help choose the best one for different kinds of business and technical needs and challenges.

Microsoft Azure Serverless Technology & IoT

This week, was introduced to Azure serverless computing technologies and an array of Azure IoT services. Looked at their features and applications before being asked to choose the best one for a given business scenario.

General Security & Network Security in Microsoft Azure

In this module, learnt about how Azure can help you protect the workloads that you run both in the cloud and in your on-premises datacenter. Also learnt about the Azure services you can use to help ensure that your network is safe, secure, and trusted.

• Preparing for the AZ-900 Microsoft Azure Fundamentals Exam

Prep Exam 1

Prep Exam 2

Prep Exam 3

Prep Exam 4

Prep Exam 5

5.Quiz and assignments

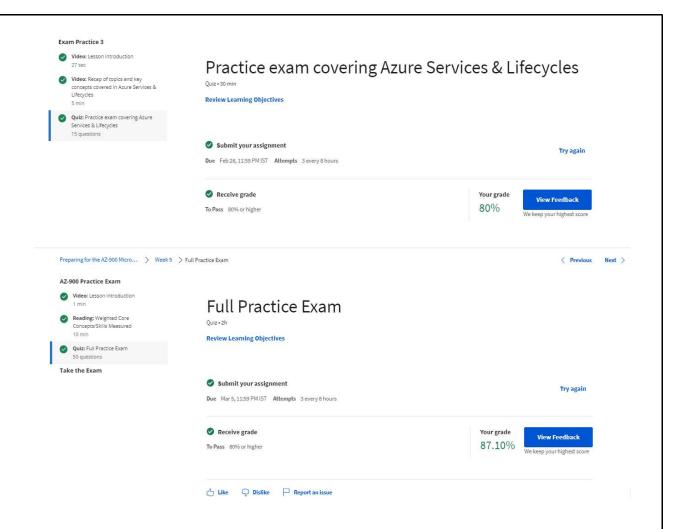
1.	Tradewind Traders current on-premises datacenter has several hundred servers and available resources in the datacenter are currently very low. Management has asked you to research a solution that will allow for increased resources but will keep expenditure such as capital expenditure and operational expenditure at a minimum. What solution should you recommend?	1/1 point
	A complete migration to the public cloud	
	Create an additional Datacenter	
	Create a new Private cloud	
	Create a Hybrid cloud	

2.	Tradewind Traders is planning to migrate to Azure cloud services. The company currently operates multiple MySQL database solutions on-premises. Management has asked you to spend some time researching the MySQL features available in Azure specifically the ability to perform automatic backups and point in time restores. You have determined that these features are available for MySQL in Azure. For how many days are point-in-time restores supported for MySQL in Azure? 15 25 35 45	1/1 point
	 Correct Azure database for MySQL supports Automatic backups and point-in-time-restore for up to 35 days. 	
	Tradewind Traders is planning to migrate to Azure cloud services. Management has asked you to research some of the main features of cloud services. Based on your research, which of the following statements is correct?	1/1 point
	An Azure region contains one or more datacenters that are connected by using a low-latency network.	
	An Azure region is found in each country where Microsoft has a subsidiary office.	
	An Azure region contains one or more datacenters that are connected by using a high-latency network.	
	An Azure region can be found in every country in Europe and the Americas only.	
4.	Tradewind Traders is planning to migrate some of their data and resources to Azure cloud services and will make use of Azure's pay-as-you-go subscription. What type of expenditure is the pay-as-you-go subscription?	1/1 point
	Operational Expenditure (OpEx)	
	Capital Expenditure (CapEx)	
5	Tradewind Traders is planning to migrate to Azure cloud services but before they do management has asked you to spend some time exploring Azure features and solutions. Which of the following should be your first step?	1/1 point
	O Create a management group	
	O Create a virtual network	
	Create a subscription	
	Create a resource group	

	6. Tradewind Traders is planning to migrate to Azure cloud services however management has asked you to research some of the main features of cloud storage. Which of the following offers fully managed file shares in the cloud that are accessible via the industry standard Server Message Block (SMB) protocol?		
	Azure Files Storage		
	Azure Disk Storage		
	Azure Blob Storage		
	Azure Storage Tiers		
7.	Tradewind Traders is planning to migrate some of their custom in-house applications to Azure cloud services. These custom applications provide various services to the organization's customers and have specific prerequisites and services. Which cloud solution should you recommend that will satisfy the organization's requirements?	1/1 point	
	O Software as a Service (SaaS)		
	O Platform as a Service (PaaS)		
	Infrastructure as a Service (laaS)		
8.	Tradewinds Traders is planning to migrate to Azure cloud services however management has questions concerning management and responsibilities once resources are migrated. You have identified three cloud service models. In which model does the cloud provider keep the hardware up to date but the operating system maintenance and network configuration are left to the cloud tenant?	1/1 point	
	• laaS		
	○ SaaS		
	∩ PaaS		
9.	Tradewinds Traders is planning to migrate to Azure cloud services. Management has asked you to research the main benefits of cloud services. Your research has shown that cloud service providers operate on a consumption-based model. Which of the following are characteristics of a consumption-based model?	1/1 point	
	Select all options that apply.		
	You only pay for additional resources when they are needed.		
	Correct In a consumption-based model, you only pay for additional resources when they are needed.		
	Resources will be charged for, even when they are not in use.		
	There is no need for companies to purchase and manage a costly infrastructure that they may or may not use to its full capacity.		
	Correct In a consumption-based model, you don't need to purchase and manage a costly infrastructure that they may or may not use to its full capacity.		

11.	Tradewinds Traders is planning to migrate to Azure cloud services. Management has asked you to research the main benefits of cloud services. Based on your research you have identified scalability as one of the main benefits. Scalability includes horizontal and vertical scaling. Which of the following is characteristic of vertical scaling?	int
	Computing capacity can be increased by adding additional RAM or CPUs to a virtual machine.	
	Ocmputing capacity can be increased by adding instances of a resource	
12.	Tradewind Traders is planning to migrate to Azure cloud services but before they do, management has asked you to spend some time researching the Database solutions available in Azure with specific regard to the use of multiple APIs. Based on your research, which of the following cloud database solutions is most appropriate to provide this feature?	
	Azure SQL Database	
	Azure Database for PostgreSQL	
	Azure Database for MySQL	
	O Azure Cosmos DB	
13.	Tradewind Traders is planning to migrate to Azure cloud services however management has asked you to research some of the main features of cloud storage. In your research, you discover that Azure storage offers different access tiers for blob and file storage. This allows you to store object data most cost-effectively. Based on your research, which is the most cost-effective tier to optimize storage for data that is infrequently accessed and stored for at least 30 days?	int
	Archive storage tier	
	Cool storage tier	
	O Hot storage tier	
14	• Tradewind Traders have recently migrated to Azure cloud services however the development team has expresse frustration at the amount of time it takes to create new virtual machines for test purposes as these machines are created and destroyed on a regular basis. Which of the following would you recommend to minimize the effort required to deploy and remove the virtual machines?	
	Azure Availability Zones	
	Azure virtual machine scale sets	
	O Azure DevTest Labs	
	Azure Reserved Virtual Machine (VM) Instances	

15. Tradewind Traders is planning to migrate to Azure cloud services however management has asked you to research connectivity features between your on-premises environment and Cloud resources. In your research, you learn that Azure virtual networks enable you to link resources in your on-premises environment with your Azure subscription. In effect, you can create a network that spans both your local and cloud environments. There are three mechanisms for you to achieve this connectivity. Which of the following is not a valid mechanism? Service endpoints Site-to-site Virtual Private Networks Azure ExpressRoute Point-to-site Virtual Private Networks Exam Practice 1 ✓ Video: Lesson introduction
30 sec Practice exam covering Introduction to Azure Core Video: Recap of topics and key concepts covered in Introduction to Azure Core Concepts and Service Concepts and Service Quiz • 30 min Quiz: Practice exam covering **Review Learning Objectives** Submit your assignment Try again Due Feb 12, 11:59 PM IST Attempts 3 every 8 hours Receive grade Your grade View Feedback 82.66% To Pass 80% or higher Exam Practice 2 Video: Lesson introduction Practice exam covering Azure Management Tools & Video: Recap of topics and key Security Solutions concepts covered in Azure Management Tools & Security
Solutions **Review Learning Objectives** Quiz: Practice exam covering Azure Management Tools & Security
Solutions 15 questions Submit your assignment Try again Due Feb 19, 11:59 PM IST Attempts 3 every 8 hours Receive grade View Feedback 80% To Pass 80% or higher We keep your highest sco



6. Outcome of the Course

It provides a comprehensive understanding of Microsoft Azure and the ability to utilize it for cloud computing needs.

Following functionalities are covered in the course:

- Describe the basic concepts and components of Microsoft Azure
- Create and configure virtual machines on Azure
- Create and deploy web applications on Azure
- Work with Azure storage options, such as blobs, tables, and queues
- Manage and secure access to resources in Azure
- Monitor and troubleshoot Azure applications and services
- Implement and manage virtual networks in Azure
- Implement and manage load balancing and auto-scaling in Azure
- Implement and manage virtual machine images and custom images
- Implement and manage storage accounts in Azure

 Implement and manage Azure web applications, including deployment and scaling Implement and manage Azure SQL databases and NoSQL databases
In summary, the four courses in the series provide a comprehensive understanding of Microsoft Azure and the ability to implement and manage various cloud computing services and applications on the platform.

7. Certificate









4 Courses

Introduction to Microsoft Azure Cloud Services

Microsoft Azure Management Tools and Security Solutions

Microsoft Azure Services and Lifecycles

Preparing for the AZ-900 Microsoft Azure Fundamentals Exam



Feb 4, 2023

Nithin

has successfully completed the online, non-credit Specialization

Microsoft Azure Fundamentals AZ-900 Exam Prep

An online program of four non-credit courses authored by Coursera and offered through Coursera. This program provides foundational level knowledge on Microsoft Azure concepts; core Microsoft Azure services; core solutions and management tools; general security and network security; governance, privacy, and compliance features; Azure cost management, and service level agreements.

The colline specialization named in this certificate may draw on material from courses taught on-campus, but the included courses are not equivalent to on-campus courses. Participation in this orline specialization does not constitute enrollment at this university. This certificate does not confer a University grade, course credit or degree, and it does not verify the identity of the latent.

Betty Vandenbosch, Chief Content Officer

Berly

Verify this certificate at: https://coursera.org/verify/specializat ion/29CL78PHMMBX

Part B

1. Demonstration Title: Dengue awareness website hosting on AWS s3

2. Tool Used: AWS s3

3. Introduction

Amazon Simple Storage Service (Amazon S3) is an object storage service that offers industry-leading scalability, data availability, security, and performance. Customers of all sizes and industries can use Amazon S3 to store and protect any amount of data for a range of use cases, such as data lakes, websites, mobile applications, backup and restore, archive, enterprise applications, IoT devices, and big data analytics. Amazon S3 provides management features so that you can optimize, organize, and configure access to your data to meet your specific business, organizational, and compliance requirements. One can use Amazon S3 to host static web pages. If we want full stack web pages with request and responses, the AWS Amplify Console supports single-page apps built with single-page app.

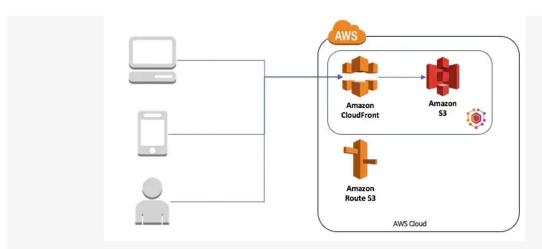


Fig 1.1 - Architecture of website on aws s3

Fig 1.1 shows the architecture diagram for the website on aws s3, images on the right (laptop, mobile) are the representation that hosted website can be used in any device connected over internet.

frameworks (for example, React JS, Vue JS, Angular JS, and Nuxt) and static site generators (for example, Gatsby JS, React-static, Jekyll, and Hugo).

4. Explanation with Steps and Figures

Steps to host website in aws s3:

1. Log in to the AWS Management Console and navigate to the Amazon S3 option.

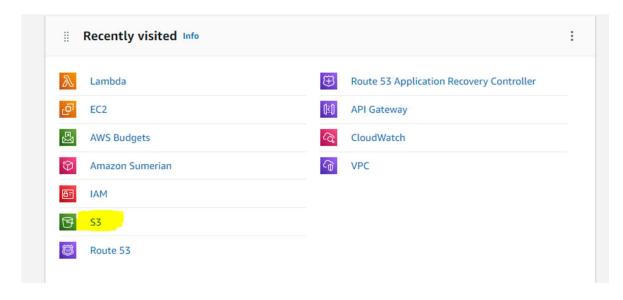


Fig 2.1 - AWS recently visited section

Lists the recently visited activities, here Lambda is being the most recently visited listed at the top.

2.Click on Create bucket option.

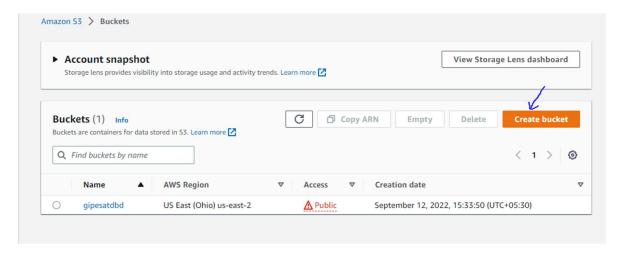


Fig 2.2 - AWS buckets

An Amazon S3 bucket is a public cloud storage resource available in Amazon Web Services (AWS). It is a container for storing data in the form of objects, which can be retrieved via a unique identifier or a URL-style path.

3. Enter the unique name for the region where you want to store the website file, click on 'Create bucket' button at the end of the file.

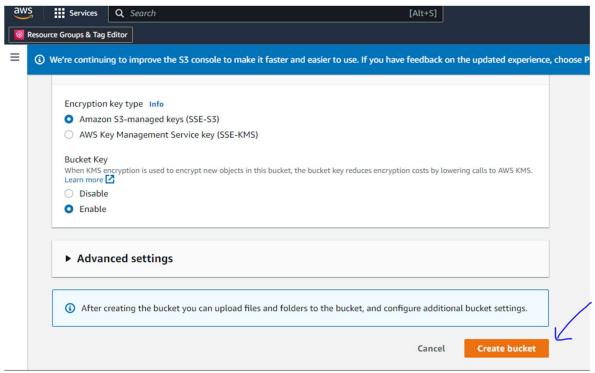


Fig 2.3 - AWS create bucket

Bucket creation in AWS refers to the process of creating a new Amazon S3 bucket, which is a public cloud storage resource. This can be done through the AWS Management Console, AWS CLI, or the AWS SDKs, and requires specifying a unique name and region for the bucket.

Created bucket gets listed.



Fig 2.4 - AWS bucket list

In AWS, bucket list refers to a collection of Amazon S3 buckets that are associated with a particular AWS account. The list of buckets can be viewed and managed through the AWS Management Console, AWS CLI, or the AWS SDKs, and can be used to store, organize, and retrieve data in the cloud.

4. Click on the upload option.

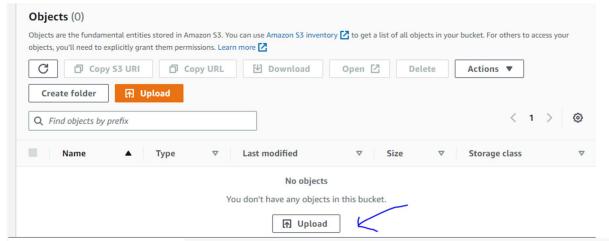


Fig 2.5 - AWS upload file

The file is stored as an object in a specified S3 bucket and can be retrieved using a unique identifier or URL-style path. To upload a file, you need to have appropriate access credentials and permissions for the target S3 bucket.

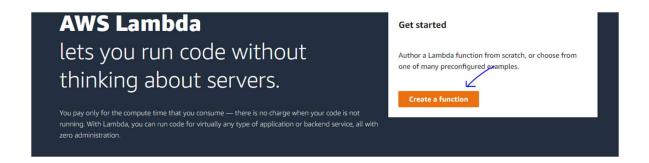


Fig 2.6 - create function

Creating a function in AWS S3 involves setting up an AWS Lambda function that can be triggered by events in an S3 bucket. This allows you to perform automated actions, such as data processing, analysis, or transfer, on objects stored in the S3 bucket, without the need for manual intervention.

5. Click on upload.

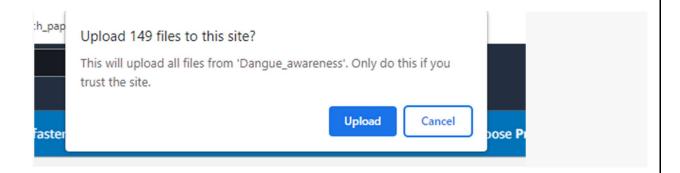


Fig 2.7 - upload file confirmation

Clicking on Upload button confirms the decision of uploading file, clicking on Cancel would cancel the action of upload. When one is sure to upload file, click on Upload button.

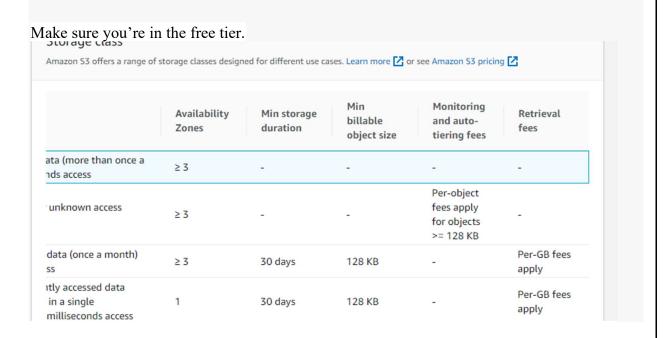


Fig 2.8 - Storage class

The storage classes determine the type of storage infrastructure used for storing data, with options including Standard, Intelligent-Tiring, Standard-IA, One Zone-IA, Glacier, and Deep Archive. The appropriate storage class for a given use case depends on the required access time, availability, and cost of storage.

6. After completing the upload, it looks like this.

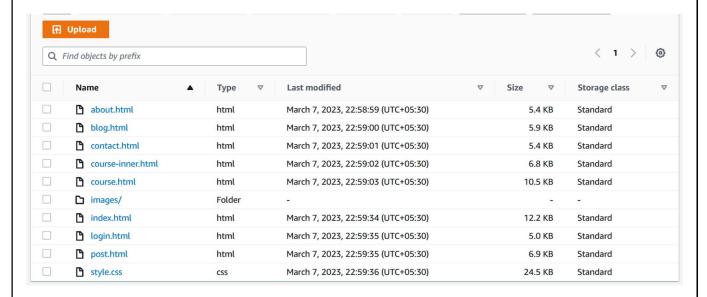


Fig 2.9 - List of uploaded files

Above figure shows the list of uploaded files. It's better to confirm the count of files to be uploaded and number of uploaded, since there's possibility of failure in upload due to network issues.

7. Click on Properties tab

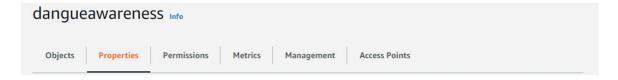


Fig 2.10 - Tabs for uploaded file section

The properties tab in Amazon S3 in AWS provides information and configuration options for an S3 bucket or object. It includes settings such as versioning, server-side encryption, access control policies, object lifecycle rules, and analytics.

8. Enable static web hosting.



Fig 2.11 - Enabling static web hosting

Enabling static web hosting in Amazon S3 in AWS involves creating an S3 bucket and configuring it to host a static website. Once set up, users can access the static website by visiting the domain name or the S3 bucket endpoint.

9.Enter the index page

Index document

Specify the home or default page of the website.

index.html

Frror document - ontional

Fig 2.12 - Setting default page

Configuring it to host a static website is done by specifying the index document and error document for the website, setting up the appropriate bucket policy, and configuring the appropriate DNS settings to map the domain name to the S3 bucket

Click on the Save changes button.

10.Go to Properties tab, open index.html file. We can see the url https://dangueawareness.s3.amazonaws.com/educationwebsite/index.html

11. When we try to open it, it'll give

```
v<Error>
    <Code>AccessDenied</Code>
    <Message>Access Denied</Message>
    <RequestId>6FSFF0SHV4NYCPNH</RequestId>
    <HostId>aD/+FbrNS6l0zX6Hlp/M0bkpojkpWZ4FyIbM66lRfk7w24RrahHFyjbttMLMSjgFkCPbq406Lx4=</HostId>
    </Frror>
```

Fig 2.12 - Access denied

If a website hosted in Amazon S3 in AWS is showing an "Access Denied" error, it may be due to incorrect bucket policy settings or insufficient permissions for the user attempting to access the website. To resolve this issue, you need to check the bucket policy and ensure that it grants the appropriate permissions for website access.

```
12.Go to the permission tab, enter the following in bucket policy.

{

"Version": "2012-10-17",

"Statement": [

{

"Sid": "Allow Public Access to All Objects",

"Effect": "Allow",

"Principal": "*",

"Action": "s3:GetObject",

"Resource": "arn:aws:s3:::dangue-awareness/*"

}

]
```

Click on the Save changes button.

13.Go to the access control list, click on edit button.

Access control list (ACL) Grant basic read/write permissions to other AWS accounts. Learn more			
Grantee	Objects	Bucket ACL	
Bucket owner (your AWS account) Canonical ID:	✓ List ✓ Write	✓ Read ✓ Write	
Everyone (public access) Group: http://acs.amazon aws.com/groups/global/AllUser s	✓ <u>A List</u> Write	✓ ▲ Read Write	
Authenticated users group (anyone with an AWS account) Group: http://acs.amazon aws.com/groups/global/Authen ticatedUsers	List Write	Read Write	
S3 log delivery group Group:	List Write	Read Write	

Fig 2.13 - Access Control List

An Access Control List (ACL) in Amazon S3 in AWS is a subresource that defines the access permissions for an S3 bucket or object. An ACL is a list of grants, which specify the AWS account or group that is granted access and the type of access that is granted (e.g. read, write, or full control).

Check the checkbox List and Read options for Everyone. It'll enable public access.

Click on Save changes.

You can see Publically accessible symbol by the side of bucket name.



Fig 2.14 - Publicly accessible website

The "Publicly Accessible" message in Amazon S3 in AWS indicates that an S3 bucket or object has been configured to allow public access. This means that anyone on the internet, regardless

of whether they have an AWS account or not, can access the contents of the bucket or object using the appropriate URL.

14. Now take the url of index. html, open it in the browser.

https://educationwebsite.s3.amazonaws.com/educational+website+original/blog.html

We can see the website getting opened.

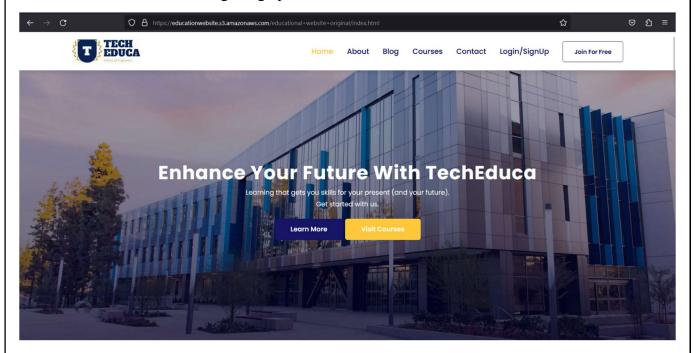


Fig 2.15 - Hosted dengue awareness website Now this website is available for public use. If the device has internet facility website can be accessible irrespective of device.

5.Outcome

Using aws s3 static web pages can be uploaded to the public access freely.

But they come with storage and time limitations. Once the limitation exceeds it'll be charged accordingly. This free tier is suitable for educational and experimental purposes.

Thus, using aws s3 static option, free static website is hosted and it's publicly accessible.

People will be able to access it with internet any time to know the information about TechEduca.